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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/693,513	10/24/2003	Nitin Muppalaneni	5693P026	2215

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NETWORK APPLIANCE/BLAKELY
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EXAMINER

KO, DANIEL BOKMIN

ART UNIT PAPER NUMBER

2189

DATE MAILED: 01/23/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/693,513	Applicant(s) MUPPALANENI ET AL.	
	Examiner Daniel B. Ko	Art Unit 2189	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10/24/2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-25 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 October 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>11/18/2005</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

This action is responsive to the application filed on 10/24/2003. Claims 1-25 have been submitted for examination.

Drawings

New corrected drawings in compliance with 37 CFR 1.121(d) are required in this application because drawings are informal. Applicant is advised to employ the services of a competent patent draftsman outside the Office, as the U.S. Patent and Trademark Office no longer prepares new drawings. The corrected drawings are required in reply to the Office action to avoid abandonment of the application. The requirement for corrected drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

1. Claims 3, 9, 14, and 20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The term "higher" in claim 3 is a relative term which renders the claim indefinite. The term "higher" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. Moreover, "a protocol which

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is at a higher logical level than RAID" in claim 3 is indefinite for failing to particularly point and distinctly claim the subject matter.

Claims 9, 14, and 20 are rejected based upon the same reasoning as claim 3.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-2, 5-8, 11-13, 15-18, and 22-25 are rejected under 35 U.S.C. 102(b) as being anticipated by Galipeau et al. (US Patent 6,308,283 B1), hereinafter simply Galipeau.

Regarding claims 1, 17, and 24, Galipeau teaches a method of operating a destination storage server to mirror a primary volume maintained by a source storage server, the method comprising:

receiving a plurality of log entries from the source storage server, the plurality of log entries representing write requests received by the source storage server (Fig. 2, WorkStation 2; column 3, lines 51-53; Galipeau discloses three workstations in local system);

writing the received log entries to a file at a mirror site (column 3, lines 26-33; column 6, lines 58-64);

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receiving data from the source storage server at a consistency point (column 7, lines 56-61; Galipeau discloses the send process reads Store and Forward Logs every tenth of a second);

using the data to update a mirror volume at the mirror site via a storage access layer in the destination storage server (column 3, lines 26-39; column 9, lines 4-15); and

using log entries from the file to update the mirror volume (column 3, lines 37-39; column 9, lines 43-64).

Regarding claims 2, 8, 18, and 25, Galipeau teaches a method, wherein the storage access layer on the destination storage server implements a RAID protocol, and the mirror volume is a RAID volume (column 1, lines 49-54).

Regarding claims 5, 11, 15, and 22, Galipeau teaches a method, wherein said using log entries from the file to update the mirror volume is done at the consistency point in conjunction with said using the data to update the mirror volume (column 7, lines 56-61; Galipeau discloses the send process reads Store and Forward Logs every tenth of a second).

Regarding claims 6, 12, 16, and 23, Galipeau teaches a method, wherein said using log entries from the file to update the mirror volume is done in response to a failure that renders the primary volume inaccessible (column 1, lines 55-58).

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Regarding claims 7, and 13, Galipeau teaches a method of mirroring data, the method comprising:

at a source storage server, receiving a plurality of write requests from a set of clients (Fig. 2, WorkStation 2; column 3, lines 51-53; Galipeau discloses three workstations in local system);

creating log entries for the write requests in the source storage server (column 3, lines 21-25);

transmitting the log entries to a destination storage server at a mirror site (column 3, lines 26-33; column 6, lines 58-64);

writing the log entries to a file corresponding to the source storage server in the destination storage server (column 3, lines 26-33); and

at a consistency point (column 7, lines 56-61; Galipeau discloses the send process reads Store and Forward Logs every tenth of a second),

causing a primary volume maintained by the source storage server to be updated based on the write requests (column 6, lines 1-57), and

causing a mirror volume maintained by the destination storage server at the mirror site to be updated to reflect the updated primary volume (column 8, lines 10-20), by

transmitting consistency point data from the source storage server to the destination storage server (column 3, lines 26-33; column 6, lines 58-64),

receiving the consistency point data at the destination storage server (column 3, lines 26-33),

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updating the mirror volume through a storage access software layer on the destination storage server based on the received consistency point data (column 9, lines 4-15), and

using log entries from the file to update the mirror volume (column 3, lines 37-39; column 9, lines 43-64).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. Claims 3-4, 9-10, 14, and 19-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Galipeau in view of Teloh et al. (US Patent Application 2003/0014433 A1), hereinafter simply Teloh.

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Regarding claims 3, 9, 14, and 20, Galipeau teaches a method of operating a destination storage server to mirror a primary volume maintained by a source storage server (See claims 1 and 7 rejections).

Galipeau fails to teach a method, wherein the receiving data from the source storage server comprises receiving the data over a network in a protocol which is at a higher logical level than RAID.

Teloh teaches a method, wherein said receiving data from the source storage server comprises receiving the data over a network in a protocol which is at a higher logical level than RAID, and wherein the method further comprises passing the data within the destination storage server to the storage access layer after receiving the data from the source storage server (page 1, paragraph 14; page 2, paragraph 21; page 4, paragraph 44; Teloh discloses transmission between the originating location and the remote location using the TCP/IP protocol which is a higher logical level than RAID).

At the time of invention it would have been obvious to a person of ordinary skill in the art to combine the Galipeau with Teloh. The motivation for doing so would be enabling remote data mirroring amongst multiple remote storage devices across data transmission paths having various transmission capabilities (page 1, paragraph 13). Teloh states that the remote data mirroring is performed using the TCP/IP protocol suites, which allows share a transmission path with other IP traffic (page 3, paragraph 42). Therefore, it would have been obvious to combine Galipeau with Teloh for the benefit of flexible transmission capabilities to implement the remote data mirroring.

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Regarding claims 4, 10, and 21, Teloh teaches a method, wherein said receiving the data from the source storage server comprises receiving the data via TCP/IP (page 1, paragraph 14; page 2, paragraph 21).

Regarding claim 19, Teloh teaches a storage server, wherein the network administration unit is at the same logical level as the file system layer (page 1, paragraph 6; page 2, paragraph 17).

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Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Daniel B. Ko whose telephone number is 571-272-8194.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Manorama Padmanabhan can be reached on 571-272-4210. The fax phone number for the organization where this application or proceeding is assigned is 703-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Daniel B. Ko
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